

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

REC'D 05 MAR 2008

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Applicant's or agent's file reference P30881WO Ru/	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP2004/014431	International filing date (day/month/year) 17.12.2004	Priority date (day/month/year) 17.03.2004
International Patent Classification (IPC) or both national classification and IPC INV. G05G9/047 G06F3/033		
Applicant 3DCONNEXION GMBH et al		


- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 10 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 4 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 17.12.2004	Date of completion of this report 06.10.2006
Name and mailing address of the international preliminary examining authority:  European Patent Office - Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840	Authorized Officer Griesbach, Axel Telephone No. +49 30 25901-419



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP2004/014431

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-10 as originally filed

Claims, Numbers

1-10 received on 17.01.2006 with letter of 17.01.2006

Drawings, Sheets

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. The following documents (D) are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

- D1: DE10146471A (GOMBERT, B. and PRITTWITZ, B.) 17 April 2003
D2: XP002321554 "Product Overview - SpaceMouse® Classic", 3Dconnexion GmbH Seefeld, Germany 2003; as retrieved from:
<http://web.archive.org/web/20030512170754/spacemouse.com/products/Classic.htm>
D3: XP002292934 "SpaceMouse Plus" 3Dconnexion GmbH Seefeld, Germany 2003; as retrieved from:
http://www.3dconnexion.de/pdf/SpaceMousePlus_German.pdf
D3a: "Products" 3Dconnexion GmbH Seefeld, Germany 2003; as retrieved from:
<http://web.archive.org/web/20040202225434/www.3dconnexion.de/products.htm>
D4: FR2665000 (PATRET, J-M.; GERMAIN, F) 24 January 1992 *
D5: DE20006843U1 (VOß, G.) 23 May 2001*.

* refers to a document cited as evidence of the skilled person's general knowledge.

Document D3 describes the features of the "SpaceMouse Plus" input device as delivered by the 3Dconnexion GmbH Seefeld. The document D3 was archived from the public Internet presence of 3Dconnexion GmbH by the Internet archive system WayBackMachine at 5 May 2003. Therefore it is proven that the SpaceMouse Classic was publicly available before the priority date of the present application. Hence its technical features belong to the relevant state of the art.

2. The application does not meet the requirements of **Article 6 PCT**, because claims 1, 2, 9 and 10 are not clear.

Although claims 1, 2, 9 and 10 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness. Moreover, lack of clarity of the claims as a whole arises, since the plurality of independent claims makes it difficult, if not impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection. Hence, the above claims do not meet the requirements of **Article 6 PCT**.

In order to overcome this objection, it would appear appropriate to file an amended set of claims defining the relevant subject-matter in terms of a single independent claim in each category followed by dependent claims covering features which are merely optional (**Rule 6.4 PCT**).

3. The present application does not meet the requirements of **Article 33 PCT**, because the subject-matter of independent claims 1, 2, 9 and 10 does not involve an inventive step in the sense of **Article 33(3) PCT**.
- 3.1. Document D1 (see in particular page 3, line 20 to 37 in combination with figure 3a), which is considered to represent the most relevant state of the art, discloses a user interface device which is adapted to generate motion control signals in a computer environment comprising the following features (the references in parentheses applying to this document):
 - a base for supporting the device on a surface (see page 3, line 33 and page 4, line 1);
 - a manipulation member mounted on the base for manual manipulation by a user (see page 5, line 3 to 14 in combination with figure 3a, reference 104);
 - input control signals are generated correspondingly to the movement of the manipulation member (see page 5, line 16 to 18);

- a display is provided on the base (see figure 3a, reference 107 in combination with page 6, line 27 to 29), wherein the display is inclined in an acute angle to the support surface.

Regarding the inclination of the display with reference to the support surface it is noted that (albeit not directly derivable from figure 3a of D1) the inclination is evidenced by the fact that D1 in page 6, line 28 cites the input device in figure 3a as a modified version of the SpaceMouse Classic. However, this has as it is shown in D2 an inclined hand rest (see figures of D2). As the display, as it can be seen in D1, figure 3a is integrated in the same hand rest it must have the same angle of inclination as the hand rest with respect to the support surface.

3.2. The subject-matter independent apparatus of claim 1 differs from the above teaching of D1 only in that:

- (a) at least the underside of one end of the base, preferably the underside of the region of the display, is elevated from the support;

the subject-matter of independent apparatus claim 2 differs from the above teaching of D1 only in that:

- (b) the display is moved from the region of the palm rest to the opposite side of the manipulation member;

the subject-matter of independent apparatus claim 9 differs from the above teaching of D1 only in that:

- (c) the inclination of the display being steeper than the inclination of the top surface of the base outside the display and

the subject-matter of independent apparatus claim 10 differs from the above teaching of D1 only in that:

- (d) the upper surface of the base is higher in the region of the display than in the region of base of the manipulation member.
- 3.3. Differentiating features (a) and (c) are pure design options which have no functional interrelationship with the previously mentioned features of independent claims 1 and 9 respectively. The man skilled in the art would apply these features according to user preferences and marketing aspects without the exercise of inventive skill. He would in particular optimise the overall design of the input device with respect to usability, user friendliness and ergonomics, e.g. to avoid glare disturbing the user by inclining the display and for protection against Repetitive Strain Injury by careful placement of the manipulation member.
- 3.4. Differentiating feature (b) is an obvious design choice for the man skilled in the art trying to improve the users view onto the display, in particular when this is used to visualize responses on user inputs (see page 5, lines 41 to 44). Moreover, a similar arrangement for placing a display in a computer input device that way that the users view onto the display is not obstructed by his own hand has already been used in the early 1990th as it can be exemplified by document D4 (see figure 1 in combination with page 5, line 18 to page 6, line 17).
- 3.5. The technical effect of differentiating feature (d) is that the users view onto the display is improved by being less obstructed by the manipulation member and/ or his own fingers operating the same. However this feature is again an obvious design choice for the man skilled in the art which is known to him at least since the times of introducing electronic calculators having displays arranged in a plane which is elevated and slanted in comparison to the plane of input keys.

The applicants arguments as put forward in his letter dated 17 January 2006 regarding an inventive step of independent claim 10 are not convincing. In particular the applicant argues that the man skilled in the art would not apply feature (d), which is known to him from early electronic calculators, to a manually operated computer input device as the two belong to completely different technical fields. However it should be noted that the given reference of an early electronic calculator stands explicitly only as one example showing the application of the trivial general technical insight of the man skilled in the art that in order to avoid the detraction of a users view

to a displayed content he has to elevate the display means over the view restricting elements. As the technical problem to be solved by this teaching is of general nature and totally independent from the technical apparatus it is applied to the man skilled in the art would apply it equally to any kind of technical apparatus and therefore also to manually operated computer input device. Hence this feature can not contribute to an inventive step of the subject-matter of independent claim 10.

- 3.6. For the reasons stated above the subject-matter of independent claims 1, 2, 9 and 10 of the present application does not involve an inventive step in the sense of **Article 33(3) PCT**.
4. Dependent claims 3 to 8, do not contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect to novelty (**Article 33(2) PCT**) or inventive step (**Article 33(3) PCT**), the reasons being as follows:
- 4.1. The additional feature added by claim 3 refers to an exchangeable palm rest. The technical effect achieved by this feature amounts to an easy opportunity to adapt the input device to specific user requirements. However, input devices being equipped with additional and exchangeable resting elements are widely known in the field, e.g. from exchangeable wrist rests for keyboards or from computer mice having a palm rest attached to themselves as it can be exemplified by document D5 (see abstract and figures 1 to 3). Therefore, for the man skilled in the art seeking to improve the ergonomic design of the input device of D1 it would be an obvious option to include this feature.
- 4.2. The additional feature of claim 4 is the same as above discussed feature (d). As it fulfills its obvious function without interacting with the features of any higher hierarchy claims to result in an unexpected technical effect the above argumentation on inventive step applies also to the subject-matter of claim 4.
- 4.3. The additional features of claims 5 and 8 are mere design options which the man skilled in the art would use as circumstances may require without the exercise of

inventive skill; he would in particular optimise the overall design of the input device with respect to usability, user friendliness and ergonomics, e.g. to avoid glare disturbing the user by inclining the display and for protection against Repetitive Strain Injury by careful placement of the manipulation member.

- 4.4. The additional feature of claim 6 differs from the above teaching of D1 (see section 3.1. above) only in that the control panel includes at least one group of user input buttons which is located in the vicinity of either the user's thumb or the user's smallest finger when the user's hand is located on the palm rest and the manipulation member is located in general alignment with and within the reach of the middle three fingers of the hand.

The technical effect of this feature is that the user can actuate the at least one group of user input buttons which are located in the vicinity of his thumb or his smallest finger without losing control over the first input member.

However, this differentiating feature has been used in document D3 (see figure at the upper right corner of the first page, showing a programmable button left and right of a manipulation member) and provides the same advantage as in the present application. The man skilled in the art would recognize that the technical effect provided by a such-like arrangement of a single key is independent from the exact number of keys placed in the vicinity of the main manipulation member. Therefore he would regard it as a normal design option to include this feature in the device described in document D1 even if a larger number of keys than just one at each side has to be placed in order to solve the problem posed. Therefore, the feature added by claim 6 does not contribute to an inventive step.

- 4.5. The additional feature of claim 7 refers to the use of programmable and preset function keys in combination with an input device and the mechanical arrangement of those keys. However this is merely a design feature as in general the use of such keys is widely known in the art and the concrete placement of the buttons is again a simple matter of ergonomic design optimization without achieving any unexpected technical effect.

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EXAMINATION REPORT - SEPARATE SHEET**

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5. For the sake of completeness the following minor deficiencies are mentioned:
 - 5.1. Contrary to the requirements of **Rule 5.1(a)(ii) PCT**, document D1 is not identified in the description and the relevant background art disclosed therein is not at least briefly discussed.
 - 5.2. Contrary to the requirements of **Rule 6.3(b) PCT**, the independent claims are not properly drafted in the two-part form, with those features which in combination are part of the closest prior art (cf. document D1) being placed in the preamble.
6. Because of the reasons stated in sections 2 to 4 above, claims 1 to 10 as presently on file are not allowable. In view of the available prior art, it does not appear that any part of the application could serve as a basis for a new allowable claim.

Axel Griesbach

Claims:

1. An ergonomic device (100) for manual input of control signals in a computer-controlled environment, the device (100) comprising:
a base (10) geometrically arranged to rest on a support surface (300);
a manipulation member (21) mounted on the base for manual manipulation by a user, the manipulation member being movable relative to the base (10) for generating corresponding input control signals within the computer environment;
a display (30) provided on the base (10), and
a palm rest (40) provided on the base for supporting the palm of the user's hand during use of the device (100),
wherein at least the underside (204) of one end of the base (10), preferably the underside of the region of the display (30), is elevated from the support (figure 4).
2. An ergonomic device (100) for manual input of control signals in a computer-controlled environment, the device (100) comprising:
a base (10) geometrically arranged to rest on a support surface (300);
a manipulation member (21) mounted on the base for manual manipulation by a user, the manipulation member being movable relative to the base (10) for generating corresponding input control signals within the computer environment;
a display (30) provided on the base (10), and

a palm rest (40) provided on the base for supporting the palm of the user's hand during use of the device (100),

wherein the manipulation member (21) is arranged between the display (30) and the palm rest (40) and wherein the display (30) is inclined in an acute angle to the support surface (300).

3. The device according to any one of the preceding claims, wherein the palm rest (40) is exchangeable.
4. The device according to any of the preceding claims, wherein the upper surface of the base (10) is higher in the region of the display (30) than in the region of base of the manipulation member (21).
5. The device according to any of the preceding claims, wherein the center axis of the manipulation member (21) is inclined relative to the vertical on the support surface.
6. The device according to any one of preceding claims, wherein the device (100) is configured such that, when the palm of the user's hand is located on the palm rest (40), the manipulation member (21) is located in general alignment with and within reach of the middle three fingers of the hand, and a first group of buttons (22, 23, 24) is arranged in one of the following positions:
 - (i) in the vicinity of the user's thumb, or
 - (ii) in the vicinity of the user's smallest finger.
7. The device according to any of the preceding claims, wherein the device (100) includes at least two groups of user input buttons (22, 24), one of said groups (24) comprising buttons whose function is able to be

programmed, and the other group (22) comprising buttons having a pre-set or predetermined operation, one of said groups (22) being arranged in the vicinity of the user's thumb and the other said group (24) being arranged in the vicinity of the user's smallest finger.

8. The device according to any of the preceding claims, wherein at least the underside (204) of one end of the base (10), preferably the underside of the region of the display (30), is elevated from the support (figure 4).
9. An ergonomic device (100) for manual input of control signals in a computer-controlled environment, the device (100) comprising:
 - a base (10) geometrically arranged to rest on a support surface (300);
 - a manipulation member (21) mounted on the base for manual manipulation by a user, the manipulation member being movable relative to the base (10) for generating corresponding input control signals within the computer environment;
 - a display (30) provided on the base (10), wherein the display (30) is inclined in an acute angle to the support surface (300), the inclination of the display being steeper than the inclination of the top surface of the base (10) outside the display (30).
10. An ergonomic device for manual input of control signals in a computer-controlled environment, the device (100) comprising:
 - a base (10) geometrically arranged to rest on a support surface (300);

a manipulation member (21) mounted on the base for manual manipulation by a user, the manipulation member being movable relative to the base (10) for generating corresponding input control signals within the computer environment;

a display (30) provided on the base (10);

wherein the upper surface of the base (10) is higher in the region of the display (30) than in the region of base of the manipulation member (21).